Green Horse Project
Hydro and Soils Prelim Work

Watersheds

- The current proposed treatment units (excluding intermediate tmts) are nearly entirely within one HUC 12 Subwatershed, Glover-Selway (Figure 1)
- Could change is project is expanded to include units throughout the project area (Figure 2)
- The Project Area includes 8 Forest Plan Watersheds (Figure 3)

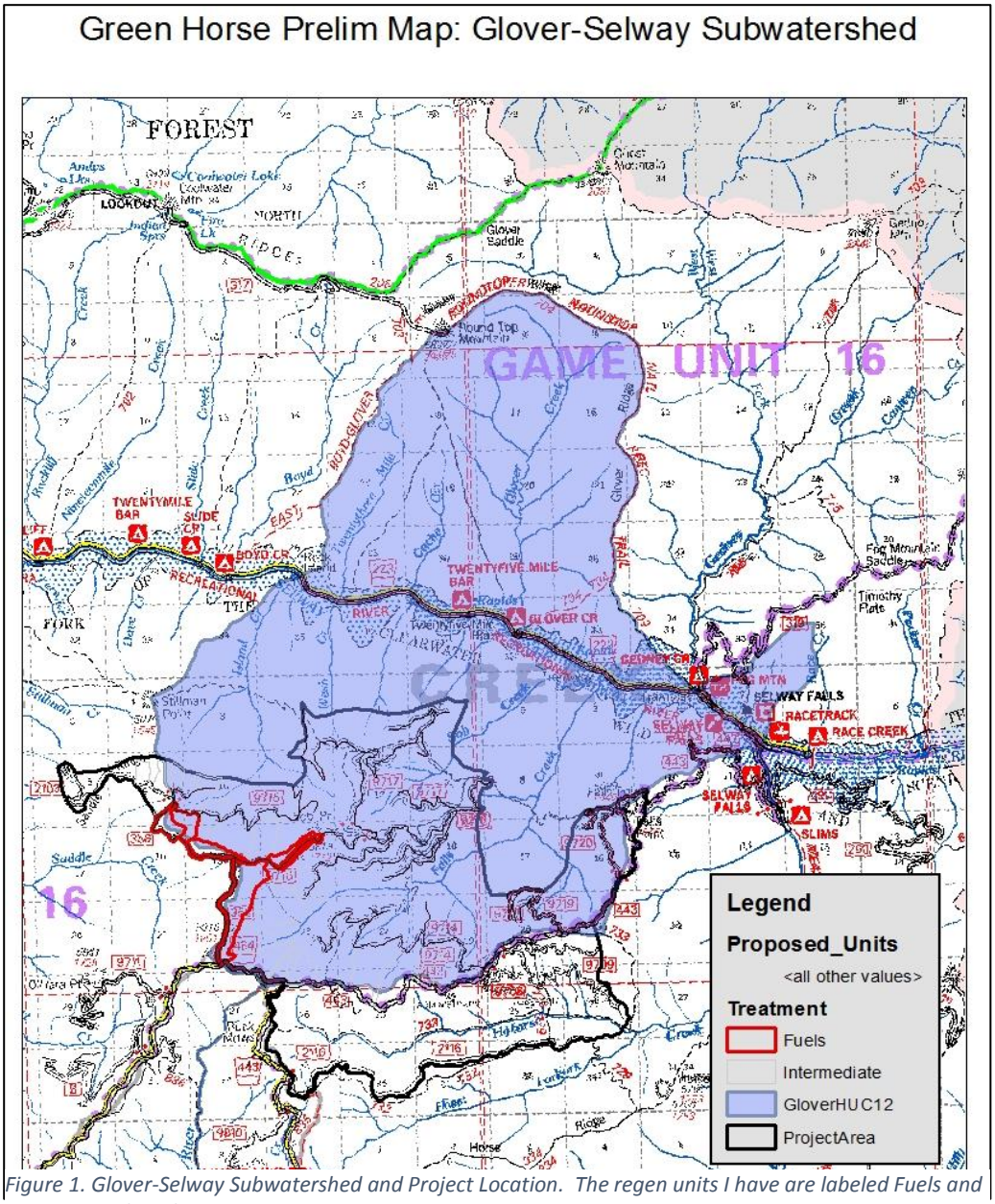

Figure 1. Glover-Selway Subwatershed and Project Location. The regen units I have are labeled Fuels and appear in red on these maps.

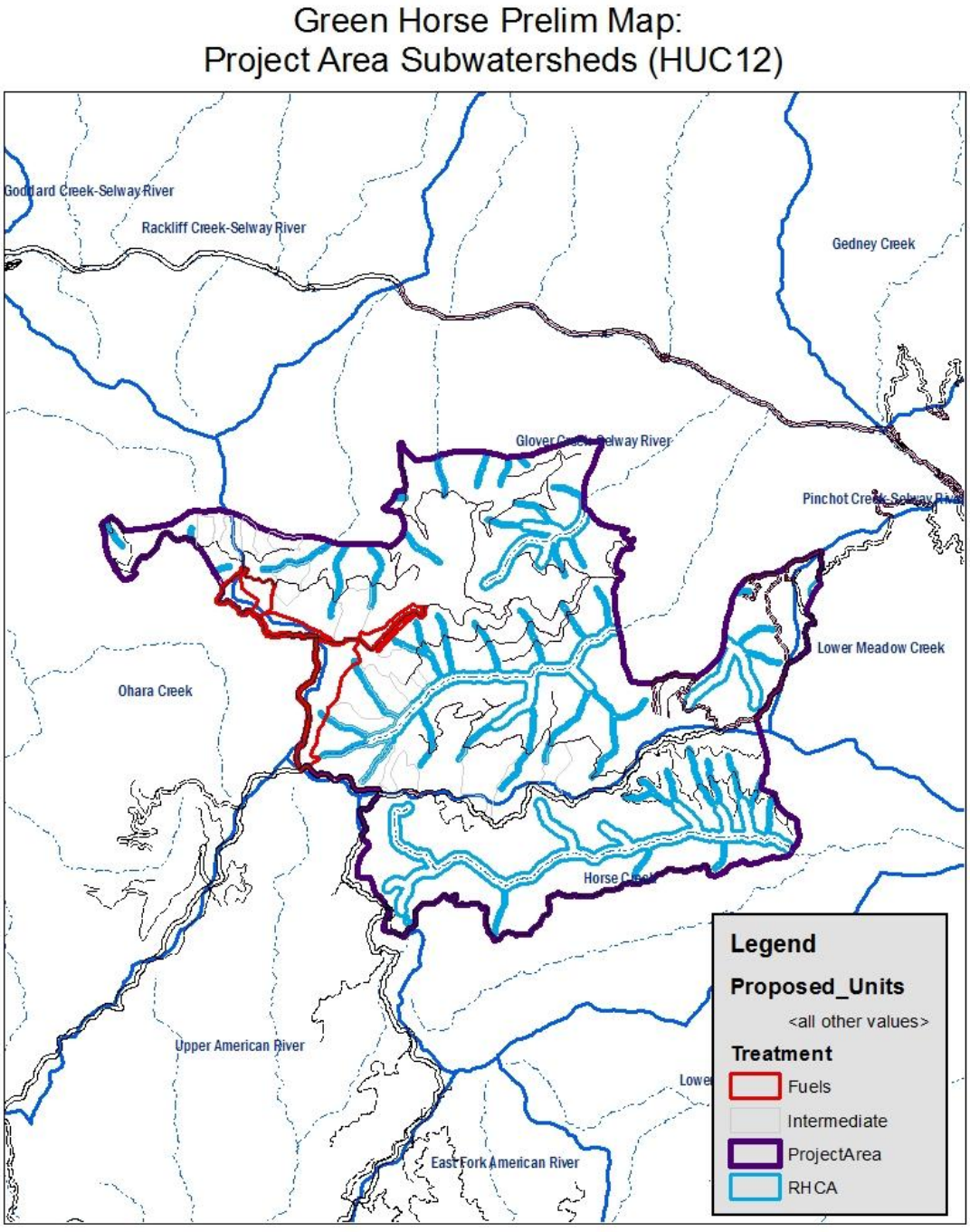

Figure 2. Green Horse Project Area Extends into three other HUC 12 Subwatersheds: Horse Creek, Upper American River, and Ohara Creek but it isn't clear if units will be proposed in these areas

Green Horse Prelim Map:
Forest Plan Watersheds and Project Boundary

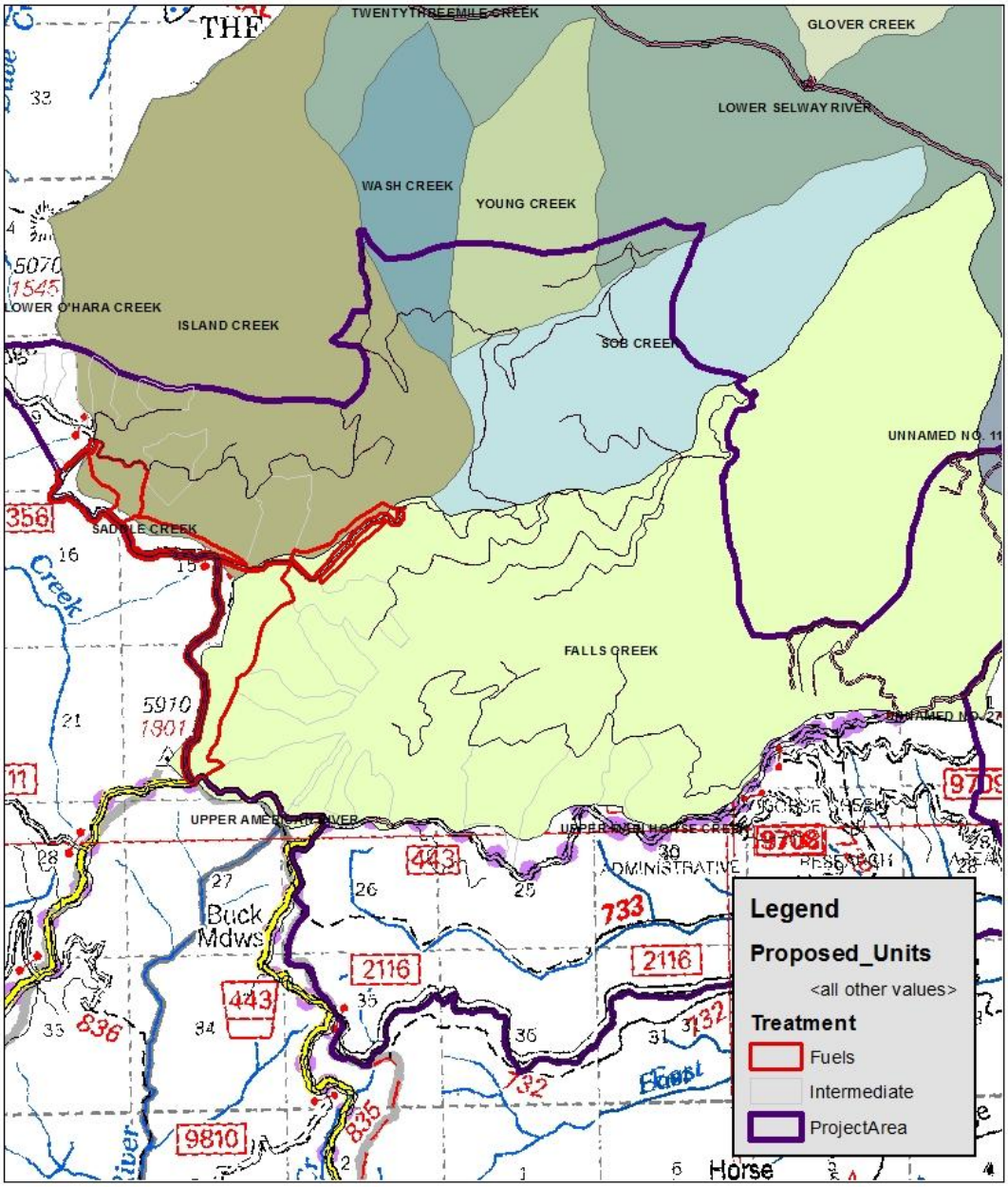

Figure 3. Green Horse proposed units occur within Falls Creek and Saddle Creek Rx Watersheds. The larger Project Area intersects with Horse Creek, Unnamed 11, SOB Creek, Young Creek, Wash Creek, Island, and O'Hara Creek.

Hydrology Indicators: Water Yield and Water Quality

Water Yield – as measured by Existing ECA within the Glover-Selway Subwatershed. Note this preliminary value does not include past fuels treatments, when Graham included these the Existing ECA went up to 20%. Note: the combined recent fire and Wash Salvage/Roadside are the drivers of existing ECA in Glover.

Table 1. Existing ECA in Glover

Activity	ECA (acres)	Percent ECA
Past Regen	689	2
Past Intermediate	284	0
Past Fire	4278	15
Existing Roads	196	1
Existing ECA		18

Water Quality—Have not run NEZSED yet and will not until the project is more solidified. Table 3 shows results produced for the Wash Roadside Treatments in 2016-some of the Prescription Watersheds are the same. Karen has some existing data which we will rely on. Here are the Forest Plan requirements for the impacted Forest Plan Prescription watershed. We counted the Roadside as Entry during the Roadside Salvage Analysis so I think that carries through.

Table 2. Forest Plan Appendix A Thresholds for the impacted Forest Plan Prescription Watershed

Prescription Watershed Number	Prescription Watershed Name	Beneficial Use	Current Fishery Habitat Potential (%)	Fishery Water Quality Objective (% Habitat Potential) 5/	Sediment Yield Guideline - Approx. Max. Sediment Yield to Meet Fish Water Quality Objectives (% over baseline) **	Entry Frequency Guideline - Number of Yrs. in Decade 1 that Sediment Yield Guideline can be Approached or Equaled	Forest Plan Amend Number
1706030 2-01-10	Glover Creek	A	100	90	40	1	
11	Unnamed No. 11	--	--	70	70	3	
12	Falls Creek	R	100	80	50	2	
13	SOB Creek	R	85	70	70	3	
14	Young Creek	--	--	70	70	3	
15	Wash Creek	--	--	70	70	3	
16	Island Creek	R	100	70	70	3	
17	Saddle Creek	A	100	90	30	1	
21	Lower O'Hara Creek 3 /	A	70	90	30 ***	1	
1706030 5-05-07	West Fk American River 2 /	A	50	90	30	1	
9	Upper American River 2 /	A	60	90	30	1	
10	East Fk American River 2 /	A	60	90	30	1	

Explanation for Table codes

A = Anadromous, R = Resident, MW = Municipal Watershed, -- = No Fishery

1 / Streams listed in the category are below carrying capacity due primarily to a lack of diversity (pool structure). This problem is caused by the removal of all large boulders and woody debris from the stream through placer

mining. These habitat components will be replaced through direct habitat improvement projects. Work will be scheduled in the latter part of the first decade (1989-1995). Work in Crooked River is underway, with an expected completion date of 1989. Timber management activities can occur in these drainages, concurrent with habitat improvement efforts, as long as habitat capacity shows a positive, upward trend.

2 / These streams are suffering from both a lack of diversity (similar to category 1) and excess sediment from past roading and timber management activities. Along with increasing diversity through direct habitat improvement, state-of-the-art techniques will be used to remove excess sediment from the gravel environment. Improvements will be scheduled between 1986 and 1995. Timber management can occur in these watersheds, concurrent with habitat improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated.

3 / Sediment is the primary limiting factor in these streams. Improvements will be scheduled between 1986 and 1995. Timber management can occur in these watersheds, concurrent with improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated.

4 / These two streams are limited by either excessive natural sediment or have suffered major hydrologic events which will be difficult to correct. Neither stream has a significant fisheries resource and no restriction of timber management activities are indicated.

5 / All objectives are relative to full biological potential of 100 percent. Due to varied productivity of each stream, the actual fish production per unit of habitat will vary.

* These streams are the Forest's priority drainages. Habitat improvement projects have been underway since 1980. Full habitat carrying capacity is expected by 1990. Streams involved are in the Newsome and Red River systems. Management-derived sediment which could affect fish habitat will not be allowed until monitoring indicates habitat has recovered to planned levels.

Table 3. **Wash Fire: NEZSED Modeled Percent Sediment Yield Increases for Prescription Watersheds**

		Existing and Management-Induced Sediment in 2016 (T/mi2/yr)			Proposed Increase in Management-Induced Sediment (T/mi2/yr)					Allowed
										Appendix A
Prescription Watershed	**Natural Base Erosion Rate (Tons/Mi2/yr)**	**Wildfire**	**Existing Roads**	**Past Logging**	**Proposed Roadwork**	**Proposed Logging and fuels treatment**	**Total Sediment Yield (T/mi2/yr)**	**Existing Increase Over Natural (Percent)**	**Proposed Increase Over Natural (Percent)**	**Percent Over Base threshold in Appendix A of Forest Plan**
UNNAMED NO. 11	55.0	10.2	0.633	0	1.4	1.4	68.6	20%	25%	70%
FALLS CREEK	25.9	2.3	0.44	0	0.06	0.1	28.8	11%	11%	50%
MEADOW CREEK (True Watershed)	14.5	0.3	0.03	0	0.03	0.02	14.9	2%	3%	30%
MIDDLE SELWAY RIVER	28.1	0.01	0.02	0	0.007	0.004	28.1	0%	0%	NA
AMERICAN RIVER (True Watershed)	13.3	0.0	0.7	0.0018	0.4	0.0	14.3	5%	8%	30%
EAST FORK AMERICAN RIVER (True Watershed)	11.0	0.0	0.4	0.0011	0.0	0.0	11.4	4%	4%	30%

Soil Resources

Soil Resource Quality Indicators- Soil Stability and Soil Productivity

1. Soil Stability- will need a field review, below is figure with the Forest GIS layer for landslide prone.

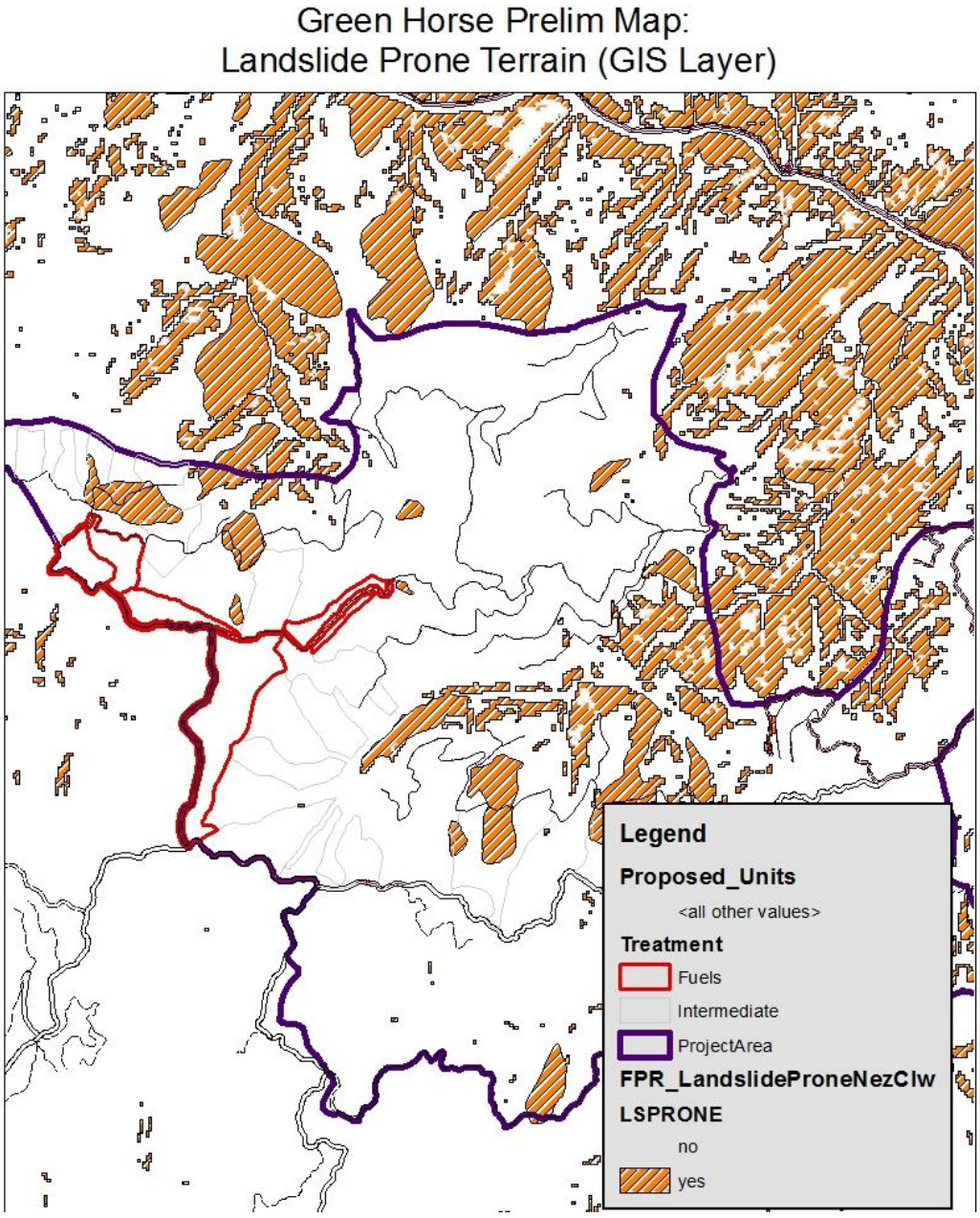

Figure 4. Project Boundary and currently identified units labeled as Fuels (in red trace) with the Forest GIS layer of Landslide Prone Terrain

Soil Productivity- as measured by Detrimental Soil Disturbance. Field surveys will be needed for this. In the current unit area as labeled by Fuels there is limited previous harvest activity recorded in FACTS, but there are quite a few previously harvested areas in the Project Unit, which may (or may not) have lingering impacts.